A NEW METHOD OF INDEX-NUMBERS FOR AMERICAN COMMODITY-PRICES.

By Francis B. Forbes.

While the foregoing article on Gold and Prices was passing through the press, it occurred to me to make an actual test of my suggestions as to the proper weighting of "Food" in determining the general level of American prices. And, as I had expressed the opinion that Messrs. Dun's apportionment to "Food" of 50 per cent. of their total was too high, while the Labor Bureau's 25 per cent. of theirs was too low, I decided to attempt an adaptation of Mr. Sauerbeck's English tables to our purposes. As he allots to "Food" 22 out of a total of 56 articles, his method of weighting comes nearly midway between the other two. From another point of view, the fact that his figures have now been continuously published for twenty years seems to indicate that his system must have enduring merits.

Now my recent study of the Labor Bureau's tables convinces me that one can hardly ask for a more carefully and completely ordered series of facts about our commodity prices than they contain. Accordingly, I have picked out from their copious list 56 articles which, I believe, will represent, as closely as is possible under the circumstances, the same number selected by Mr. Sauerbeck for England. Like Mr. Sauerbeck, I give 22 articles under "Food" and 34 under "Materials," but there is a difference of one article more or less in all but one of the sections. Another modification of no importance is that I have included "Sugar, Coffee, and Tea" under "Vegetable Food" instead of giving them a section apart, as Mr. Sauerbeck has done.

The greatest difficulty, however, in following the English model has come from the fact, which I have discussed elsewhere, that four-fifths of the Labor Bureau's articles are "manufactured," only 50 out of 259 being classified by the authors as "raw," while in Mr. Sauerbeck's tables 36 out of 56, or about two-thirds, are "raw" by the same classification. I have consequently been able to use, from the Labor Bureau list, only 11 "raw" commodities out of the 22 under "Food," and 16 out of the 34 under "Materials"; that is, about one-half of the total. In several instances, in order to keep Mr. Sauerbeck's weighting of an article unchanged, I have had to substitute a "manufactured" for a "raw" form; but even this has not always been practicable. Where some of Mr. Sauerbeck's commodities have been wholly omitted from the Labor Bureau list, I have had to replace them by others in the same group and of analogous importance.

The following tables, where my proposed method is presented, show Mr. Sauerbeck's lists of articles, alongside of their American representatives, so that the differences mentioned above can be studied in detail. As to the prices for the various articles, I have simply copied the Labor Bureau's respective index-numbers for the years 1897, 1904, and 1905, the average prices for the years 1890–99 being taken as 100. In this way not only can the percentages of advance between 1897 and 1905, according to this new method, be compared with those shown by the Labor Bureau's and Messrs. Dun's figures in the foregoing paper, but similar comparisons are continued for another year. For the sake of record I have added Mr. Sauerbeck's comparative index-numbers with the respective rates of advance since the English lowest price level in 1896.

TABLE I. FOOD.

Mr. Sauerbeck's English List.	American List selected from Labor Bureau's Tables.	Labor Bureau's Index-Numbers.		
		1897.	1904.	1905.
Vegetable Food. (including Sugar, Coffee, and Tea).	*Vegetable Food. (including Sugar, Coffee, and Tea).*			
Wheat, English gazette	Wheat, contract cash	105.8	138 3	134.5
Wheat, American	Wheat flour, spring patents	106.8	125.2	126.2
Flour, town-made white	Wheat flour, winter patents	113.4	125.5	118.1
Barley, English gazette	Barley, by sample	71.2	116.9	107.0
Oats, English gazette	Oats, cash	67.9	135.8	111.2
Maize, American mixed	Corn, No. 2, cash	66.9	132.6	131.7
Potatoes, good English	Corn-meal, fine white	77.8	127.8	126.4
Rice, Rangoon cargoes	Corn-meal, fine yellow	75.1	131.1	130.3
Sugar, British W. Indian refining	Rye, No. 2	74.9	133.4	134.5
Sugar, beet, 88% f. o. b.	Potatoes, Burbank	65.7	146.3	80.7
Sugar, Java, floating cargoes	Sugar, 89° fair refining	90.6	102.1	108.8
Coffee, Ceylon low middling	Sugar, 96° centrifugal	92.1	102.7	110.6
Coffee, Rio, good channel	Coffee, Rio, No. 7	60.4	59.6	63.4
Tea, common congou	Tea, Formosa fine	98.6	97.1	94.2
Tea, average import price (15 articles)	Totals for 14 articles	1,167.2	1,674.4	1,577.6
	Averages	83.4	119.6	112.7
Animal Food.	*Animal Food.*			
Beef, prime	Beef, steers (average of 2)	99.5	110.8	111.2
Beef, middling	Beef, fresh, native sides	99.7	106.1	104.0
Mutton, prime	Beef, salt (average of 3)	103.9	113.9	117.6
Mutton, middling	Mutton, sheep (average of 2)	94.2	109.0	131.5
Pork, average large and small	Mutton, dressed	96.6	103.2	113.9
Bacon, Waterford	Pork, hogs (average of 2)	82.8	116.6	120.1
Butter, Friesland fine to finest (7 articles)	Bacon (average of 2)	79.8	115.1	118.9
	Butter (average of 3)	84.1	98.4	112.8
	Totals for 8 articles	740.6	873.1	930.0
	Averages	92.6	109.1	116.3
	Total Food.			
	Vegetable food, 14 articles	1, 167.2	1,674.4	1,577.6
	Animal food, 8 articles	740.6	873.1	930.0
	Totals for 22 articles	1,907.8	2,547.5	2,507.6
	Averages	86.7	115.8	114.0

TABLE II. MATERIALS.

Mr. Sauerbeck's English List.	American List selected from Labor Bureau's Tables.	Labor Bureau's Index-Numbers.		
		1897.	1904.	1905.
Minerals.	*Minerals.*			
Iron, Scotch pig	Pig iron (average of 4)	78.0	103.7	124.0
Iron, bars	Bar iron, Pittsburg best refined	75.9	102.1	129.0
Copper, Chili bars	Copper, ingot, Lake	91.7	106.2	127.7
Copper, English tough cake	Copper, sheet, hot-rolled	88.2	108.5	120.1
Tin, Straits	Tin, pig	74.0	152.5	170.3
Lead, English pig	Lead, pig	94.0	116.3	125.7
Coal, Wallsend	Coal, anthracite (average of 4)	102.9	130.4	130.1
Coal, average export price (8 articles)	Coal, bituminous, f. o b. New York	89.0	116.5	114.8
	Totals for 8 articles	693.7	936.2	1,041.7
	Averages	86.7	117.0	130.2
Textiles.	*Textiles.*			
Cotton, middling uplands	Cotton, middling uplands	92.2	155.9	123.1
Cotton, fair Dhollerah	Cotton yarns, cones 10/1	90.3	123.2	107.8
Flax, St. Petersburg best	Cotton yarns, cones 22/1	90.8	115.7	103.5
Flax, Russian, average import	Jute, raw	103.9	123.7	151.0
Hemp, Manila fair roping	Wool, Ohio fine fleece	89.7	124.2	137.4
Hemp, St. Petersburg clean	Wool, Ohio medium fleece	87.6	106.7	117.2
Jute, good medium	Worsted yarns, 2.40's Australian	83.6	116.6	123.0
Wool, merino, Port Phillip av.	Worsted yarns, 2.40's XXX	81.3	116.3	126.4
Wool, merino, Adelaide av.	Silk, Italian	85.5	90.8	96.5
Wool, English, Lincoln hlf. hogs	Silk, Japan filatures	86.2	90.6	99.3
Silk, Tsatlee (11 articles)	Totals for 10 articles	891.1	1,163.7	1,185.2
	Averages	89.1	116.4	118.5
Sundry Materials.	*Sundry Materials.*			
Hides, River Plate, dry	Hides, green salted	106.3	124.4	152.6
Hides, River Plate, salted	Leather, sole, hemlock, Buenos Ayres	104.8	116.5	118.1
Leather, crop hides, 30/45 lbs.	Leather, sole, oak	91.6	102.6	108.9
Tallow, St. Petersburg Y. C.	Tallow	76.3	105.5	103.2
Tallow, town	Oil, cotton-seed	77.7	103.0	88.6
Oil, palm	Oil, linseed, raw	72.2	91.7	103.1
Oil, olive	Seeds, flaxseed No. 1	78.1	99.6	107.6
Oil, linseed	Petroleum, crude	86.5	178.8	152.1
Seeds, linseed	Petroleum, refined for export	92.0	127.3	111.2

TABLE II. MATERIALS,—*Continued.*

Mr. Sauerbeck's English List.	American List selected from Labor Bureau's Tables.	Labor Bureau's Index-Numbers.		
		1897.	1904.	1905.
Sundry Materials.	*Sundry Materials.*			
Petroleum, refined	Manila rope	67.6	125.4	127.9
Soda, crystals	Rubber, Para Island	105.6	135.8	155.2
Nitrate of soda	Wood alcohol, 95%	72.9	61.6	70.8
Indigo, Bengal good	Tar	87.5	139.4	145.9
Timber, hewn, average import	Timber, spruce	97.6	142.9	149.3
Timber, sawn or split, average	Timber, white oak, plain	96.8	124.2	126.5
(15 articles)	Timber, yellow pine	89.0	116.0	134.9
	Totals for 16 articles	1,402.5	1,894.7	1,955.9
	Averages	87.7	118.4	122.2
	Total Materials.			
	Minerals, 8 articles	693.7	936.2	1,041.7
	Textiles, 10 articles	891.1	1,163.7	1,185.2
	Sundries, 16 articles	1,402.5	1,894.7	1,955.9
	Totals for 34 articles	2,987.3	3,994.6	4,182.8
	Averages	87.9	117.5	123.0

TABLE III. SUMMARY.

Total Food 22 articles	1,907.8	2,547.5	2,507.6
Total Materials 34 articles	2,987.3	3,994.6	4,182.8
Grand total 56 articles	4,895.1	6,542.1	6,690.4
General averages	87.4	116.8	119.4

TABLE IV.

COMPARISON OF THREE METHODS OF AMERICAN INDEX-NUMBERS.

(*See Tables in Foregoing Paper.*)

Authors.	1897.	1904.		1905.	
	Index-Numbers.	Index-Numbers.	Percentage of Advance since 1897.	Index-Numbers.	Percentage of Advance since 1897.
Labor Bureau.					
Food	85.5	110.9	**29.7**	111.6	**30.5**
Other than Food	90.5	113.6	**25.5**	117.3	**29.6**
Grand totals	89.7	113.0	**26.0**	115.9	**29.2**
*Dun.**					
Food	82.7	120.3	**45.5**	118.3	**43.0**
Other than Food	89.2	117.4	**31.6**	121.5	**36.2**
Grand totals	86.0	118.8	**38.1**	119.3	**38.7**
Present Writer.					
Food	86.7	115.8	**33.6**	114.0	**31.5**
Other than Food	87.9	117.5	**33.7**	123.0	**39.9**
Grand totals	87.4	116.8	**33.6**	119.4	**36.6**
	1896.	1904.		1905.	
Mr. Sauerbeck's English Comparative Index-Numbers.					
Food	90.5	99.3	**9.7**	100.7	**11.3**
Materials	93.9	112.7	**20.1**	117.4	**25.0**
Grand totals	92.4	106.1	**14.8**	110.0	**19.0**

Neither time, nor my allotted space, will admit of any analysis of these new combinations of Labor Bureau figures. Indeed, my sole object in preparing these notes has been to furnish some materials for forming an opinion as to how far Mr. Sauerbeck's method of index-numbers can be usefully applied to American conditions.

* In this table Messrs. Dun's figures for 1904 and 1905 are calculated from their twelve monthly averages for each year, instead of from their published figures for each July 1, as was necessary for the period covered by the foregoing paper.